

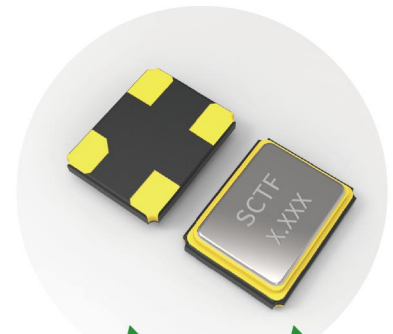
# A3X Series 3.2 x 2.5 mm SMD Crystal

## Feature

- AT-cut Crystal Construction
- Ultra miniature ceramic surface mount with Metal Lid
- High temperature, high precision and reliability Characteristics
- Pb-free and RoHS/Green compliant.
- AEC-Q200 Qualified

## Applications

- Industrial Control & Automation
- ADAS
- LiDAR (Light Detection and Ranging)
- Power Control & Conversion



## Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	8.000		54.000	MHz	
Oscillation Mode		Fundamental (AT-cut)				
Frequency Tolerance	$\Delta f/f$			$\pm 10$	ppm	at 25°C $\pm 2^\circ\text{C}$
Operating Temperature	T_use	-40		85	°C	
		-40		105	°C	
		-40		125	°C	
Storage Temperature Range	T_sta	-55		125	°C	
Shunt Capacitance	C0			3	pF	
Drive Level	DL		10	100	$\mu\text{W}$	
Load Capacitance	CL	6		20	pF	
Insulation Resistance	IR			500	M $\Omega$	at DC 100V
Aging	f_age			3	ppm	1st. Year at 25°C

## Frequency Stability & Operating Temperature Range

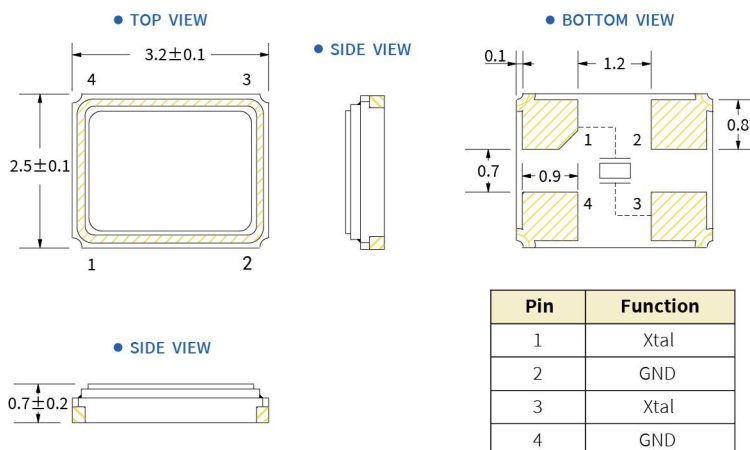
Temp.	FT	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$	$\pm 50\text{ppm}$
	-40°C to +85°C	$\Delta$	★	★	★
-40°C to +105°C		$\Delta$	★	★	★
-40°C to +125°C			$\Delta$	★	★

★: Available     $\Delta$ : Conditional

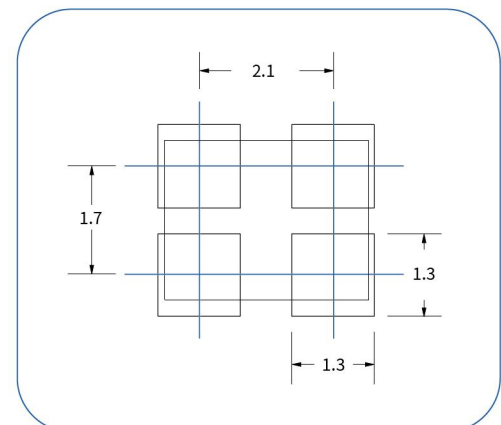
## Equivalent Series Resistance

Frequency Range	ESR(Max.)
8MHz $\leq$ Freq. < 10MHz	300 $\Omega$
10MHz $\leq$ Freq. < 16MHz	100 $\Omega$
16MHz $\leq$ Freq. < 20MHz	60 $\Omega$
20MHz $\leq$ Freq. $\leq$ 54MHz	30 $\Omega$

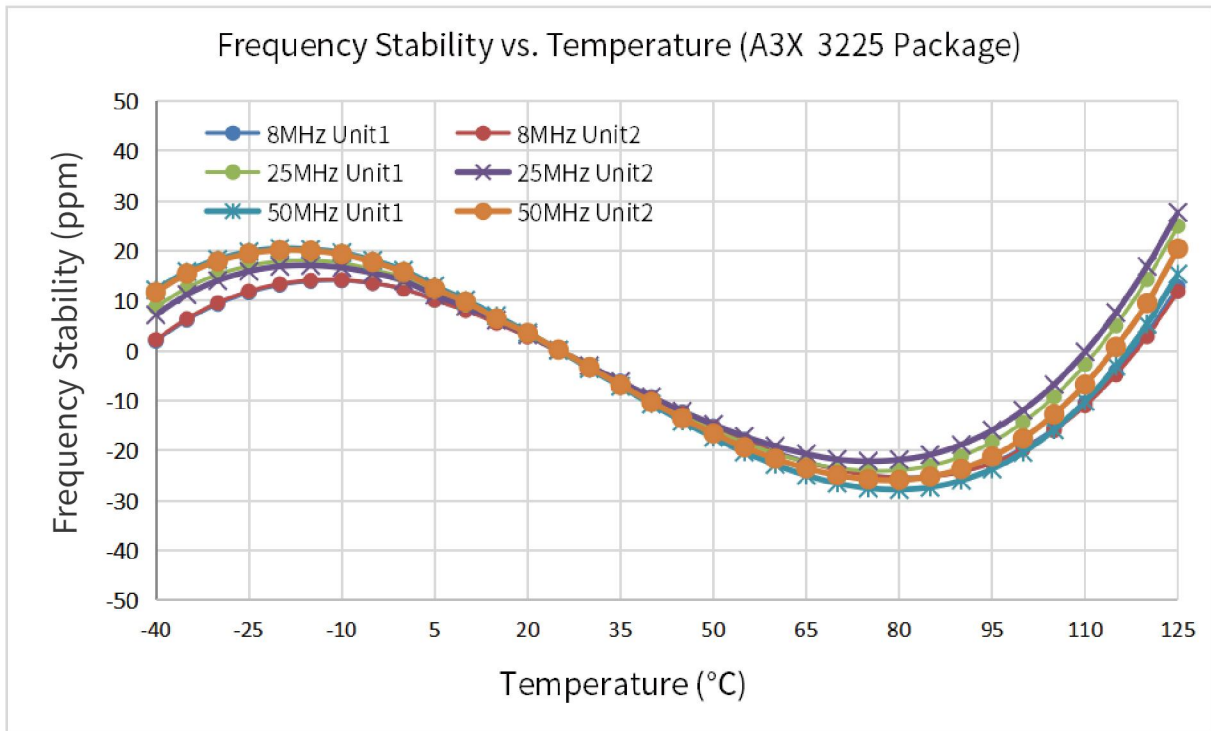
## Dimensions (UNIT:mm)



## Solder pad layout (UNIT:mm)

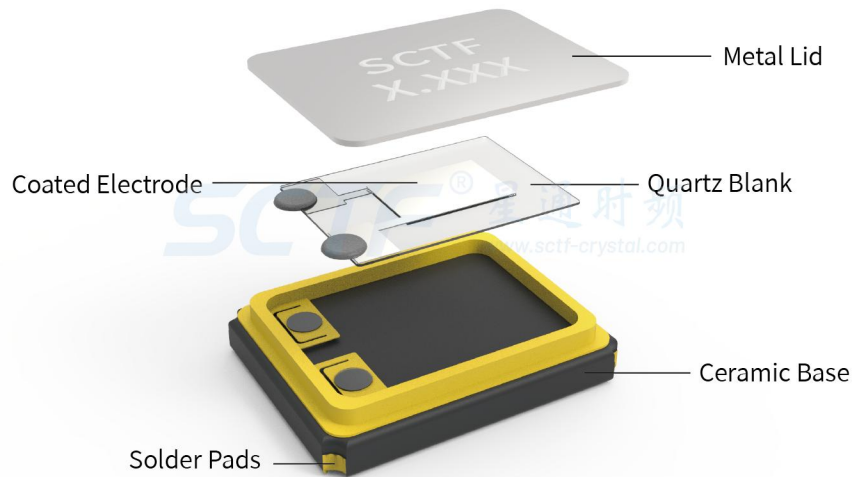


## Frequency Temperature Characteristics

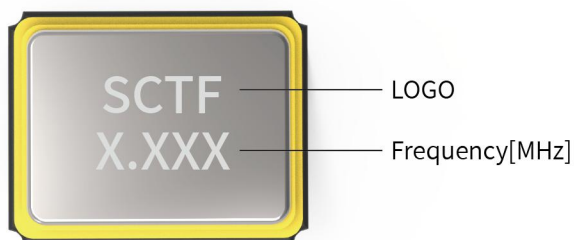


## Product Structure & Marking Information

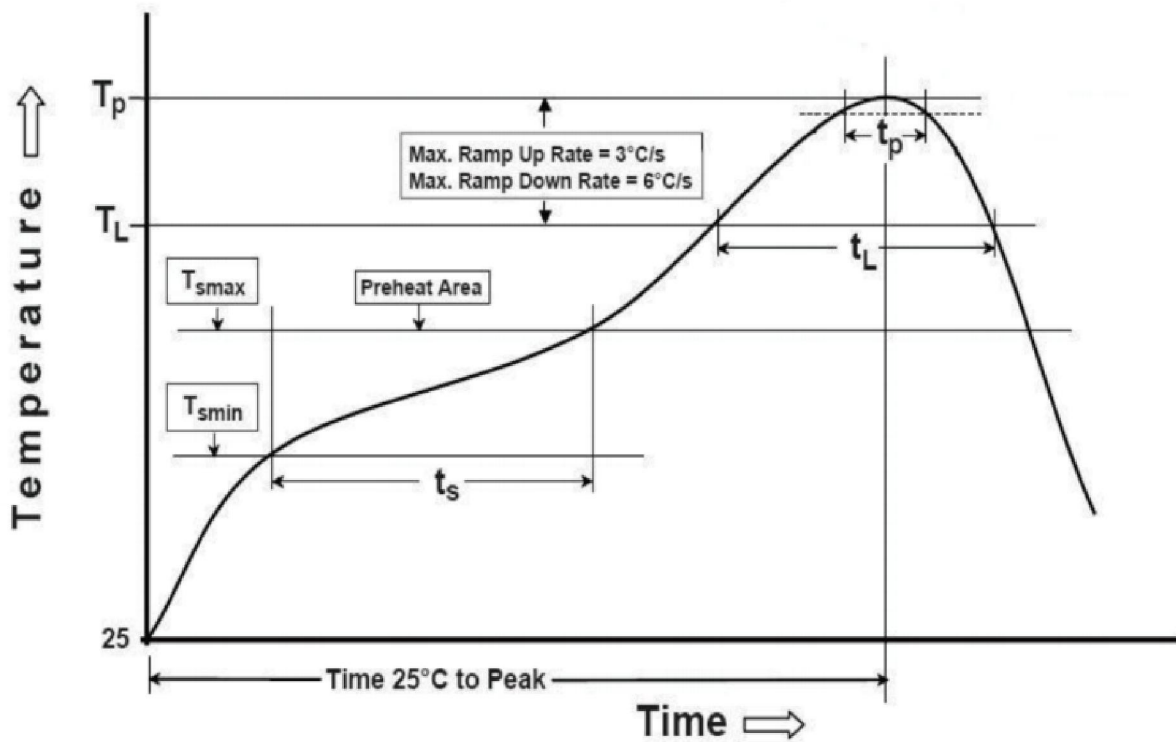
### Product Structure



### Marking Information



## Suggested Reflow Profile

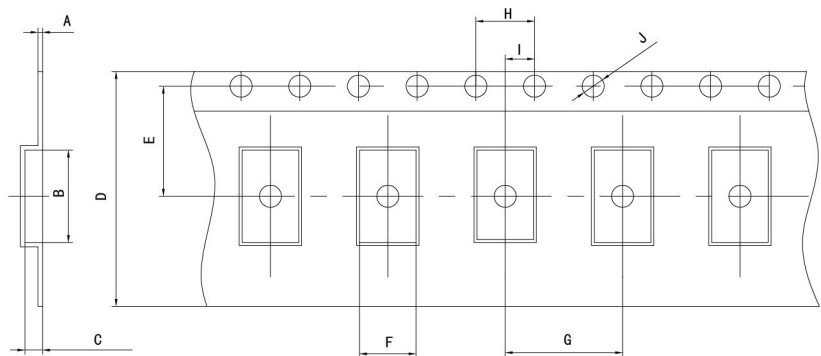
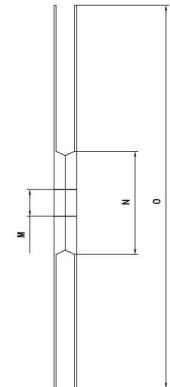
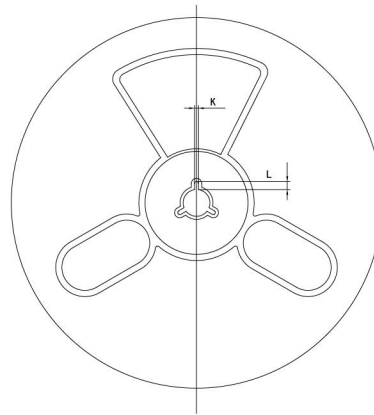


Profile Feature	Sn - Pb Eutectic Assembly	Preheat / Soak
Preheat / Soak <ul style="list-style-type: none"> <li>● Temperature Min ( T<sub>s</sub> min )</li> <li>● Temperature Max ( T<sub>s</sub> max )</li> <li>● Time ( T<sub>s</sub> min to T<sub>s</sub> max )</li> </ul>	100°C 150°C 60-120 seconds	150°C 200°C 60-120 seconds
Ramp - up rate ( T <sub>L</sub> to T <sub>p</sub> )	3°C/ second max.	3°C/ second max.
Time maintained above <ul style="list-style-type: none"> <li>● Liquidous temperature ( T<sub>L</sub> )</li> <li>● Time ( t<sub>L</sub> ) maintained above T<sub>L</sub></li> </ul>	183°C 60-150 seconds	217°C 60-150 seconds
Peak package body temperature ( T <sub>p</sub> )	235°C	260°C
Time within 5° C of the specified classification temperature ( T <sub>p</sub> )	20 seconds	30 seconds
Ramp - down rate ( T <sub>p</sub> to T <sub>L</sub> )	6°C/ second max.	6°C/ second max.
Time 25° C to peak temperature	6 minutes max.	8 minutes max.
<b>Suggest reflow times</b>	<b>2 Times max.</b>	

# A3X Series 3.2 x 2.5 mm SMD Crystal

## Packaging Information

T=Tape and reel (3,000pcs/reel)



Pocket Tape Dimensions(mm)

Series	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A3X	0.25±0.05	3.5±0.1	1.0±0.1	8.0±0.1	3.5±0.1	2.75±0.1	4.0±0.1	4.0±0.1	2.0±0.1	φ1.5±0.1	2.0±0.2	4.0±1.0	φ13±0.5	φ60±1	φ180±1

## Common Frequencies – MHz

A3X Series				
8.000	10.000	11.0592	12.000	12.288
12.800	13.000	13.52127	13.52313	13.560
13.598	13.824	14.31818	14.7456	16.000
16.384	16.9344	18.432	19.200	19.6608
20.000	22.1184	22.5792	24.000	24.305
24.576	25.000	26.000	27.000	27.120
27.1383	28.224	28.63636	29.4912	30.000
32.000	32.768	33.000	36.000	36.864
37.400	38.400	40.000	48.000	50.000
52.000	52.083333	54.000		